



Assessment Date: July 6, 2003

Benefits:

- Saves more than \$22,000 in operating costs per year
- Reduces electricity use by nearly 460,000 kWh per year and natural gas use by about 662 MMBtu per year
- Has payback periods ranging from 2 to 8 months

Applications:

To reduce energy use and costs, increase productivity, and enhance corporate competitiveness, the assessment team focused on manufacturing processes as well as lighting, heating, compressed air usage, and waste management.

Bemis Manufacturing Company: Compression Molding Company Saves More Than \$22,000 Per Year by Implementing Industrial Energy Assessment Recommendations

Summary

The University of Wisconsin–Milwaukee’s Industrial Assessment Center (IAC) conducted an energy audit at Bemis Manufacturing Company’s production plant in Sheboygan Falls, Wisconsin, that should save more than \$22,000 in operating costs. The IAC, sponsored by the U.S. Department of Energy (DOE) Industrial Technologies Program (ITP), is one of 26 across the nation in which faculty and students provide eligible small- and medium-sized manufacturers with no-cost energy assessments. This assessment project was sponsored by ITP and The Society of the Plastics Industry, Inc. (SPI), a DOE Allied Partner.

Opportunities for saving electricity were found that included installing a flow controller to better control the compressed air system, using outside air for the compressors, and installing synchronous belts on various motor systems. The assessment team also found that scheduling forklift charging during off-peak hours would reduce overall demand. Gas-saving opportunities involved adjusting the boiler air-fuel ratio and insulating some equipment. Implementing a reverse osmosis filtration system would provide savings on water and sewer costs. At least 57% of the assessment team’s recommendations were implemented at the plant.

Company Background

Bemis Manufacturing Company is one of the world’s largest manufacturers of molded wood, wood veneer, and plastic toilet seats. Its Sheboygan Falls facility annually generates approximately \$150 million in sales and processes about 70 million pounds of wood flour per year. The facility assessed measures 330,000 square feet; the production area is 295,000 square feet. At the time of the assessment, production consumed nearly 47 million kWh of electricity and about 96,000 MMBtu of natural gas annually, for a total energy cost of approximately \$2.6 million in the facility assessed.

Assessment Approach

A team consisting of students and a director from the University of Wisconsin–Milwaukee IAC carried out an assessment of this facility on June 6, 2003. The assessment team met with plant personnel, toured the facility, and collected data. After the team reviewed potential energy-saving opportunities, they presented their findings to the plant’s managers. The assessment was led by IAC Director Dr. Umesh Saxena.



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Recommendations

Energy Conservation Awareness. While making recommendations to reduce energy, as shown in the table, the assessment team found that employees were already using many conservation practices at the Bemis Manufacturing facility to reduce energy consumption. For example, management encourages employees to turn off or shut down idle processing equipment, lights, fans, air compressors, and other types of energy-consuming equipment when they are not in use.

Energy-Efficient Equipment. In addition to the recommendations for increasing the efficiency of equipment, as shown in the table, the assessment team noted that the facility has state-of-the-art, energy-efficient fluorescent lighting that consumes only about half the power used by standard, high-intensity discharge lighting. The team also found that Bemis filters and reuses heated plant air and has insulated molding equipment well. Plant personnel have also installed dock seals in the shipping department to reduce the loss of heated air through the doors.

Results

Bemis Manufacturing implemented four of the six recommendations provided by the IAC for the Sheboygan Falls facility. These projects will result in more than \$22,000 in annual cost savings, as shown in the table. Energy conservation measures that were implemented will reduce electrical usage by more than 459,000 kWh, lowering electrical demand by approximately 734 kW-months per year (kW-mo/yr).¹ Annual natural gas usage will also be reduced by about 662 MMBtu.

Implemented Recommendations for Bemis Manufacturing's Sheboygan Falls, WI Plant

Project Category/ Recommendation	Annual Resource Savings	Annual Cost Savings	Implementation Cost	Payback Period
Motors Replace belts with synchronous belts	270,071 kWh; 260.4 kW-mo/yr	\$9,663	\$3,433	5 months
Process Supply • Use outside air for compressor	189,274 kWh; 260.4 kW-mo/yr	\$7,050	\$1,240	3 months
• Adjust boiler air-fuel ratio	661.5 MMBtu	\$3,486	\$500	2 months
Demand Charge forklift trucks during off-peak hours	268.5 kW-mo/yr	\$22,344	\$1,400	8 months
Total	459,345 kWh/yr; 733.9 kW-mo/yr; 661.5 MMBtu/yr	\$22,344	\$6,573	

¹ kW-months per year represents total kW savings per year, based on kW savings per month.

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Project Partners:

Bemis Manufacturing Company
Sheboygan Falls, WI

The Society of the Plastics
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For Additional Information:

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Energy Efficiency and
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